WHAT IS CLAIMED IS:

1. A composition for treating stainless steel parts at temperatures between 750°F and 950°F comprising alkali metal cyanates and alkali carbonate and wherein said cyanate ion is present in a weight percentage of greater than 45% and less than 55.2%.

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2. The invention as defined in claim 1 wherein said cyanate ion is present in a weight percentage of greater than 45% and less than 50%.

3. The invention as defined in claim wherein said cyanate ion is present in weight percentage of about 48%.

4. The invention as defined in claim 1 wherein said alkali metal is selected from the group of sodium, potassium, and mixtures thereof.

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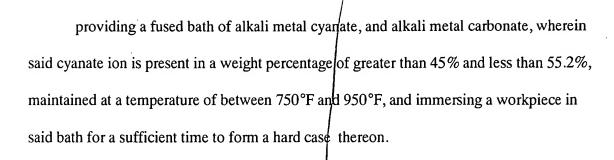
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- 5. The invention as defined in claim 1 wherein said alkali metal is a mixture of sodium and potassium.
- 6. The invention as defined in claim 5 wherein the ratio of potassium to sodium is about 3.9 to 1.0.

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7. A method for producing a nitride or a hard case on a stainless steel workpiece comprising the steps of:

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8. The invention as defined in claim 7 wherein said cyanate ion is present in a weight percentage of between 48% and 50%.

9. The invention as defined in claim 7 wherein said cyanate ion is present in A weight percentage of about 48%.

10. The invention as defined in claim 7 wherein said alkali metal is selected from the group of sodium, potassium, and mixtures thereof.

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- 11. The invention as defined in claim 7 wherein said alkali metal is a mixture of sodium and potassium.
- 12. The invention as defined in claim 11 wherein the ratio of potassium to sodium is about 3.9 to 1.0.

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13. The invention as defined in claim 7 wherein said workpiece is stainless steel.

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- 14. The invention as defined in claim 18 wherein said workpiece is austenitic stainless steel.
- 15. The invention as defined in claim 14 wherein said workpiece is immersed in said bath for at least four hours at a temperature of between 750°F and 850°F.
- 16. The invention as defined in claim 15 wherein the temperature is between about 750°F and 815°F and the workpiece is 304 stainless steel.
- 17. The invention as defined in claim 13 wherein the workpiece is hardenable stainless steel and the temperature is about 950°F.